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ABSTRACT

This document presents findings and recommendations of a resource group charged with providing background information and recommendations concerning the utilization of existing facilities and needs for new facilities for the development of a master plan for higher education in Connecticut. Taken into consideration by the resource group were the specific areas of: (1) the construction backlog; (2) the facilities process; (3) facility utilization and standards; (4) comprehensive planning; (5) private and regional resources; (6) auxilliary fund facilities; (7) architect selection; (8) facilities delivery; and (9) environmental and esthetic considerations. (HS)

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FACILITIES

UTILIZATION OF EXISTING FACILITIES
NEEDS FOR NEW FACILITIES

The Report of

RESOURCE GROUP III

A Discussion Paper for the

MASTER PLAN FOR
HIGHER EDUCATION IN CONNECTICUT

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
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Document #11
February 1973

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Note: This report is the work of the Resource Group; the reader is reminded that the recommendations made in this report are not necessarily opinions or positions of the Commission for Higher Education or any other group.

STATE OF CONNECTICUT
COMMISSION FOR HIGHER EDUCATION
P.O. BOX 1320 - HARTFORD, CONNECTICUT 06101
AREA CODE 203 566-3913

February, 1973

To the Reader:

The 1972 General Assembly passed Public Act 194 which directed the Commission for Higher Education to develop a Master Plan for Higher Education in Connecticut by January 1974. In response, the Commission determined a structure designed to insure broadly based participation in the development of the plan. An overview of that structure is contained in the following document.

One of the most important elements of the Master Plan structure is the Resource Groups. Since September 1972, these groups, made up of over two hundred persons, have addressed themselves to major topics for the Master Plan. The reports of these groups have been made available to public boards of higher education with the request that the reports be disseminated to the chief executives and to the chief librarians of each institution and that the broadest discussion possible of the resource groups' topics be encouraged among faculty, students and interested groups. In addition, copies are being made available through public libraries and to organizations and governmental agencies which might be interested. Because the supply of the reports is limited, any interested individuals are permitted to reproduce any or all reports.

This report is one of eight Resource Group Reports. It should be recognized that the topics assigned to the Resource Groups are not mutually exclusive. Therefore, the reader is encouraged to read all eight reports.

The Commission for Higher Education is most grateful to the many individuals who gave freely of their time and energies serving on Resource Groups. The excellent groundwork they have provided in their reports will facilitate the deliberations of additional groups and individuals as the process of the Master Plan development continues.

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INTRODUCTION

The following report has been prepared by the Resource Group for consideration by the Commission for Higher Education as it develops a Master Plan for higher education in Connecticut. To insure clear understanding of this report a number of points should be emphasized:

- The findings and recommendations are the considered judgment of the individual Resource Group. They do not necessarily represent an opinion or position of the Commission for Higher Education or any other group such as the Management/Policy or Review and Evaluation Group.

- This report is one of eight reports.The Resource Group reports, as a whole, are position papers for consideration in the development of the Master Plan. They should not be construed as constituting a first draft of the Master Plan. Subsequent to further discussion and comment, the recommendations made in reports may be retained, revised, or deleted in the Master Plan.

- The recommendations of the group may conflict with recommendations made by other groups. The reconciliation of conflicting recommendations will be considered in the process of developing a draft Master Plan.

- The development of a Master Plan is a dynamic process requiring continuing input from many sources. Although the Resource Group reports provide an important source of judgments about the elements of the plan, additional reaction, comment, and thought is required before an initial draft of the Master Plan can be completed.

All questions and comments concerning this report should be addressed to Master Plan Staff Associates, c/o The Commission for Higher Education, P.O. Box 1320, Hartford, Connecticut 06101.

PROCESS OF THE MASTER PLAN

Groups Involved in the Master Plan

I. Commission for Higher Education: The State's coordinating agency for higher education was requested by the General Assembly (P.A. 194, 1972) to develop, in cooperation with the boards of trustees of the constituent units of the public system, a Master Plan for Higher Education in Connecticut. The plan is to be completed and submitted to the General Assembly by January, 1974.

II. Management/Policy Group: A steering committee for the Master Plan process; membership consists of the chairmen of the boards of trustees for the constituent units, and the president of the Connecticut Conference of Independent Colleges. Liaison representation from the Governor's office and from the General Assembly are also represented.

III. Resource Groups: These groups are charged with developing position papers on specific topics for utilization in the development of a Master Plan. Membership is proportionately balanced between the higher education community and non-academics to insure that a broad spectrum of viewpoints be represented in group deliberations. Each group was assigned specific questions by the Management/Policy Group. In addition, each group was encouraged to address any other questions as it saw fit.

IV. Review and Evaluation Group: A group invited to review, evaluate, and make comments on the Resource Group reports and successive drafts of the Master Plan. Ten members represent a wide spectrum of the state's business and public interest activity and three ex-officio members are from state government.

V. Master Plan Staff Associates: Each of the constituent units of the public system and the Connecticut Conference of Independent Colleges have provided staff support for the Master Plan project. The staff associates serve a dual function: (1) each staff associate provided staff assistance to a Resource Group and, subsequently, (2) the staff associates will, in collaboration with the Commission staff, prepare the draft of the Master Plan.

VI. Constituent Unit Boards of Trustees, including Faculty, Students and Administration: All boards of trustees of the higher education system are asked to review carefully the Resource Group reports and the Master Plan drafts to follow. It is expected that each institution will encourage the fullest possible discussion among faculty, students, and administrators.

VII. The Public: In addition to the higher education constituencies noted above, a vital input to the Master Plan is the participation of all who are interested, including: individuals in industry, labor, minorities, professionals -- in short, all organizations and individuals interested in higher education. Comments are invited at any stage of the development of the Master Plan. However, for consideration for the initial draft of the Master Plan, comments must be received by April 1973 and in the final draft of the Master Plan by September 1973.

AN OUTLINE OF ACITVITIES FOR THE DEVELOPMENT OF THE MASTER PLAN

Activity	
1. CHE requests staff assistance from constituent units	6/72
2. CHE appoints Management/Policy Group	
3. Management/Policy Group:	
a. Identifies elements of Master Plan	
b. Develops queries to be addressed	
c. Appoints Resource Groups	
4. CHE holds Colloquium Orientation meeting	
5. CHE appoint Review and Evaluation Group	
6. CHE approves interim report for transmittal to Governor	12/72
7. Resource Groups complete and transmit papers to Management/ Policy Group	
8. Mangement/Policy Group distributes Resource Group reports to Constituent units, Review and Evaluation Group, and other interested groups and individuals	
9. Comments on Resource Group reports are submitted by Review and Evaluation Group, constituent units, and other interested individuals and groups	
10. Initial Draft of Master Plan is prepared and distributed to constituent units and Review and Evaluation Group	
11. Initial reactions are received and Draft of Master Plan is amended	
12. CHE sponsors public presentation of amended Draft of Master Plan and solicits comments from all groups and individuals who are Interested	
13. Comments reviewed and evaluated and final draft prepared	
14. Management/Policy Group receives final comments on final Draft of Master Plan from constituent units and Review and Evaluation Group, reports to CHE	
15. CHE approves final draft of Master Plan and transmits it to the Governor and General Assembly	12/73

THE REPORT OF THE

FACILITIES RESOURCE GROUP

of the

Master Plan for Higher Education

State of Connecticut

January 30, 1973

340 Capitol Avenue Hartford 06101

LETCHER-THOMPSON INC. ARCHITECTS ENGINEERS 299 WASHINGTON AVE. BRIDGEPORT, CONN. 06604 (203) 366-5441

February 1, 1973

Mr. Donald H. McGannon
Chairman
Commission for Higher Education
Post Office Box 1320
Hartford, Connecticut 06101

Dear Mr. McGannon:

The report of the Resource Group on Facilities is transmitted herewith.

Our Committee sincerely hopes that it will provide substantial and positive material for the implementation of the Five-Year Master Plan for the State of Connecticut.

We wish to include, under the same cover, our deepest appreciation, first, for the honor you bestowed on us in designating us for this project; second, for the compliment you have paid us in assuming that we could even approach its accomplishment in so short a time; and, above all, for the patience and forbearance you and your associates will be called upon to exercise when you have analyzed our efforts and discover that you have placed this truly Cyclopean task in the inept hands of a group of no-more-than-average mortals.

Very cordially,

Robert H. Mutrux, AIA

RHM/abk
Enc.

REPORT OF THE FACILITIES RESOURCE GROUP OF THE MASTER PLAN

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Westinghouse Electric Corporation

90 Park Avenue
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Donald H McGannon
President
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September 18, 1972

Mr. Robert Mutrux
c/o Fletcher-Thompson, Inc.
299 Washington Avenue
Bridgeport, Connecticut 06604

Dear Mr. Mutrux:

Now that all eight of the Resource Groups have chairmen, I am writing each person who has accepted a chairmanship to express my personal appreciation for his or her willingness to serve. I can think of no activity that will be of more significance to the development of higher education in the state, or that will require more extended and detailed attention, than the construction of a Master Plan. So much of what will happen in the future will depend on how well we plan and how apparent it is to the public that we have performed capably in that area.

Warren has advised me of the activity which has taken place to date and I am gratified by what he reports. Please accept my thanks, and those of the members of the Management/Policy Group and the Commission for Higher Education, for accepting a leadership role in this important enterprise.

I look forward to seeing you at Southern Connecticut State College on Monday.

Sincerely,

Donald H. McGannon
Chairman, Commission
for Higher Education

DHM:ja

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SUMMARY OF FINDINGS AND RECOMMENDATIONS

FACILITIES RESOURCE GROUP

1) THE CONSTRUCTION BACKLOG

Finding: It is clear that the State is struggling with building commitments to a range of institutions, commitments it finds exceedingly difficult to finance. It is also clear that the State is looking for sound guidance on just how to treat with this backlog.

Recommendation: It is recommended that the Governor give clear and immediate guidance as to the availability of capital funds for each of the constituent units of higher education, based on an evaluation of the facility priority recommendations made by these units this past year. Further, it is recommended that the Commission for Higher Education in collaboration with the Boards of Trustees of the constituent units establish a pattern for capital construction that: (a) lengthens out the program of development of the Community College system; (b) insists on a slower plan of facilities development for the University, State, and Technical Colleges; and (c) defers commitment to new programs that require new facilities.

2) THE FACILITIES PROCESS

Finding: There exists no authoritative advisory body in higher education with the staff, the expertise, and the responsibility to devise standardized procedures of facilities programming, to gather sufficient data on the quantity and quality of facilities, to advise on the priorities of facilities needs based upon constituent unit plans, and to seek out and illuminate State fiscal plans in the facilities area.

Recommendation: Establish within the context of the Commission for Higher Education a Central Facilities Group within the offices of the Commission with an appropriately-structured Advisory Committee of its own to carry out the above functions and to encourage within the constituent units a continuing planning process and the exploration of opportunities for developing joint-use facilities (See later recommendation).

2) FACILITIES PROCESS (Cont.)

Finding: There is pending legislation to transfer the responsibilities of the Commission on Aid to Higher Education to the CHE and to reserve a role for members of the Commission on Aid as advisory to the CHE on facilities. The Commission on Aid is a knowledgeable body, familiar with Federal programs that benefit higher education and familiar with facility needs at both public and private institutions. This expertise would be valuable within a facilities process. The staff and members of the Commission on Aid could thus comprise in part the makeup of the proposed Central Facilities Group.

Recommendation: Proposed legislation to transfer the responsibilities of the Commission on Aid to Higher Education to the CHE should be supported, reserving a role for the members of the Commission on Aid, who could usefully be asked to serve as an advisory body to the CHE on facilities need. It is further recommended that members of this advisory body be composed of representatives of both private and public institutions as well as others with competency in evaluating facilities requirements and that these members be appointed by the Commission for Higher Education.

* * *

Finding: The present process of facility planning is inadequate in staff and resources at the campus and the constituent unit Board of Trustees level to carry out proper planning activities to yield timely and relevant data on facility needs. The inputs from such decentralized planning activities are vital to proper consideration of need and priorities by a Central Facilities Group.

Recommendation: Facilities planning should be a decentralized activity carried out at the level of the campus and constituent unit Board of Trustees and that funds for operations and staff for a continuing planning capability be a part of the budget requests of each constituent unit.

* * *

Finding: The Department of Public Works has for years been bearing most of the criticism for the failure to deliver facilities efficiently and economically. We find this criticism exaggerated; the fault belongs to all of the agencies that have had a hand in meeting construction requirements--from the constituent units to the Commission for Higher Education; from the State Administration to members of the General Assembly.

Recommendation: The Department of Public Works should be strengthened with a Deputy Commissioner and appropriate staff specifically charged with responsibility for higher education facilities and cooperation with the Central Facilities Group.

3) FACILITY UTILIZATION AND STANDARDS:

Finding: Our Resource Group soon determined that traditional classroom and laboratory utilization studies, while they do have their appropriate use and value, by and large are an imperfect means of establishing the degree of efficiency and adequacy with which institutions use their facilities. At best these data relate to a fraction of facilities on campus and treat them within a limited context. Thus the conclusions of the recent Etherington Report on classroom utilization at public institutions of higher education have been found to be in serious error and misleading.

Recommendation: It is recommended that: (a) utilization data from both public and private institutions continue to be gathered; (b) that the Central Facilities Group within the CHE be charged with responsibility for insuring its accuracy and relevance; (c) that this same group recommend to the State appropriate standards of utilization; and (d) that the CHE improve its own comprehension of the meaning of utilization data and its appropriate context so that it is in a stronger position to relieve some of the misguided public apprehension over existing conditions.

* * *

Finding: Connecticut maintains stringent space requirements for elementary and secondary schools, but it has not established adequate standards of space or a clear notion of the scale of facilities appropriate to the individual constituent units of higher education.

Recommendation: Pending the development of facility space standards of its own, the State should adopt the standards developed by the Western Interstate Commission for Higher Education, feeling that these standards are probably the most thoughtfully designed in the nation today.

4) COMPREHENSIVE PLANNING

Finding: The present processes of institutional planning at the campus level are generally sporadic and uneven. Most important of all, though many of the planners have been talented, they have not had access to realistic fiscal parameters against which to do the planning. These inadequacies have restricted opportunities to take into account changing needs and purposes as they relate to students, other institutions, and to higher education as a system with their consequences in the quantity and quality of facilities. Such plans are vital for the functioning of an adequate facilities process.

Recommendation: Continuing and adequate procedures of comprehensive planning including periodic development of academic and physical plans should be established for each separate institution of public higher education.

5) PRIVATE AND REGIONAL RESOURCES

Finding: The Resource Group was impressed greatly with the availability of educational resource in the private sector, particularly within an often-neglected sector, that of the proprietary schools. Taking advantage of such resources may reduce the burden of facility needs in public higher education.

Recommendation: Wherever feasible and desirable in the development of higher education in the State, and in the planning of individual institutions due account shall be taken of the resources of the private and proprietary sectors of higher education to make use of the possibilities of joint use and sharing of facilities through contract programs.

* * *

Finding: There are substantial resources in public and private higher education as well as in non-higher education institutions which are located within educational regions as defined by the CHE and which may usefully augment one another to the benefit of the region and the State.

Recommendation: Data on facilities and academic resources should be compiled by regions to be used in the planning process so that they may lead to the optimum utilization of resources, and in the optimum development of higher education within a region.

6) AUXILIARY FUND FACILITIES

Finding: One of the profound problems facing the constituent units relates to the funding of non-academic facilities, including student union buildings, parking areas, and dormitories. Construction costs have simply outdistanced the ability of students on many campuses in Connecticut to finance these much-needed facilities. A further burden is imposed by the limited 20 year bonding term that does not spread out the cost of facilities to the generations of students who will use them.

Recommendation: The newly-imposed tuition payments should be segregated to provide a Self-Liquidating Facilities Fund with which to finance such non-academic facilities across the State and the term under which bonds are sold for these projects be lengthened from the present 20 years to 30 years.

7) ARCHITECT SELECTION

Finding: The present system of the selection of architects and engineers by the Department of Public Works fails to lead to the optimum choices of professionals that would lead to the establishment of the relationship of confidence and rapport between the user agency and professionals needed for the proper design and programming of facilities.

Recommendation: The president of an institution shall have a significant voice in the selection of all professionals engaged in the planning, programming, and design of campus facilities.

8) FACILITIES DELIVERY

Finding: Due to factors beyond its control the Public Works Department has not operated in an efficient manner in the production of facilities for higher education. We believe that there is great opportunity: (a) to speed the process of design and construction through a streamlining of procedures; (b) to explore new techniques of design and construction; (c) to develop increased use of the private sector through leaseback and other contractual arrangements; and (d) to save substantial money through elimination of unnecessary delays occasioned by the present process.

Recommendation: The organization and operations of the Department of Public Works should be reviewed to the end that it may make optimum use of methods and approaches to improve its effectiveness in facilities delivery in terms of speed, quality, and economy.

9) ENVIRONMENTAL AND ESTHETIC CONSIDERATIONS

Finding: It requires no great breadth of observation nor depth of perception to realize that the relation between the physical symbol for higher education and the world around it has not achieved the high standard that the State deserves. The exterior appearance of facilities, on the whole, is spartan at best; in the layout and design of facilities, the environment has more often than not been either neglected or totally ignored.

Recommendations: Every effort should be made to achieve the highest level of quality in these vital areas. Respect for environmental factors in site planning, energy conservation, and the preservation of natural resources is of prime importance in a field which, by definition, is a major influence in the shaping of the world we live in and hope to enjoy.

Furthermore, we are dealing in an area whose visual impact is evident well in advance of its functional effect. It is essential, therefore, that creations resulting from the Master Plan, in every case, be a distinct credit to the institution that inspired it, the State that hosts it, and the taxpayer who supports it.

In particular, funds should not only be budgeted but reserved, first, for planning which will result in an agreeable natural setting, and second, for interiors in which stimulating works of creative art may be displayed and appreciated.

FACILITIES RESOURCE GROUP
ANSWERS TO QUERIES

A. UTILIZATION:

1. WHAT IS THE CAPACITY OF FACILITIES IN INSTITUTIONS OF HIGHER LEARNING IN CONNECTICUT?

Capacity of facilities is a judgment that is dependent upon many factors such as purposes, standards of space, and the availability of classrooms and supporting facilities. It therefore appears impossible to answer this question in the light of the inadequate data available.

2. WHAT IS THE RATE OF UTILIZATION OR CAPACITY OF FACILITIES IN INSTITUTIONS OF HIGHER LEARNING IN CONNECTICUT? PUBLIC? INDEPENDENT?

The Commission for Higher Education is issuing in the near future a report on classroom and laboratory utilization of the public and private sector in the State of Connecticut. See Chapter III of our own report for a discussion of the relevance of utilization data.

3. HOW DOES THIS COMPARE NATIONALLY?

Comparing earlier reports of Connecticut's classroom utilization as published by the Commission for Higher Education with reports from other State systems indicates that in general Connecticut uses its classrooms as intensively or moreso than other State systems.

4. WHAT SPECIFIC CHANGES, IF ANY, COULD INCREASE RATE OF CAPACITY UTILIZATION?

Chapter III of this report discusses the role and context of space utilization. In our judgment the goal of maximizing space utilization in itself is of dubious value. As an end in itself it leads to illogicalities such as changing over classroom space to support space or increasing enrollments on a campus or using teaching techniques that lead to greater classroom use.

B. WHAT IS THE APPROXIMATE DOLLAR INVESTMENT IN FACILITIES IN THE PUBLIC AND PRIVATE SECTORS?

Space inventory data appear to have some errors. There appear to be approximately 20,000,000 gross square feet of space in the public and private sectors of higher education. Assuming a replacement cost of facilities of $80 per square foot to include the cost of utilities, sitework, parking areas, land, and professional fees, it is estimated that the value of these facilities is $1.6 billions.

C. WHAT ARE DOLLAR ESTIMATES FOR EXPANSION OF FACILITIES TO 1979?

Projections for the next five years submitted by the constituent units to the Commission for Higher Education during the last budget period indicate, based on present plans, that there is a need for a total of $453,866,000 in facilities over this period.

D. WHAT ALTERNATIVES ARE THERE FOR DEVELOPING NEW FACILITIES?

The Facilities Resource Group considered the implication of many alternative approaches to the construction of facilities. It is clear that if alternatives eliminate the need for facilities at little or no penalty in educational effectiveness, or indeed improve it, the cost of facilities for higher education will be thereby reduced. Some of the alternatives identified were the sharing of facilities and services among institutions, year round use of facilities through quarter calendars, time shortened degrees, educational television, and so on.

While on the surface some of these approaches appear plausible and hopeful, the Facilities Resource Group has concluded that it is only their application within the settings of actual institutions that educational implications, costs, and benefits can be truly assessed. It appears that it is within the academic phase of comprehensive facility planning (See Chapter IV of this report) within an institution that such considerations can most usefully be brought to bear to affect the facility program of a college. The Facilities Resource Group, therefore, cannot in general advocate any specific proposals except to cite that these proposals should be factored in at the appropriate time--the cyclical periods when an institution is creating and updating its academic plan.

E. SHOULD ANY CHANGES BE MADE IN POLICIES REGARDING THE CONSTRUCTION OF DORMITORY FACILITIES?

The Facilities Resource Group has made a number of recommendations in this area which are discussed in Chapter VI, Auxiliary Fund Facilities, in this report.

F. WHAT MAJOR CHANGES IN FACILITIES SHOULD BE PLANNED OVER THE NEXT DECADE?

Plans should be made for the Community Colleges to get permanent facilities, and existing campuses should be built to acceptable standards of space, or at least considerable strides should be made in this direction.

Preface and Acknowledgements

The history of higher education is written in three major chapters. It is recorded in the galaxy of great teachers whose precepts, from the beginning of time, have influenced man's development and increased his knowledge of the world and of himself. It is written in the list of students who have gone into the world prepared to guide the course of men and of events. And it is written in its buildings.

This aspect of advanced instruction, though it is the most prominent and the most easily grasped, is philosophically the least important. The locale of one of the first universities was a mere grove of trees dedicated to the God Academus. No mention is made of structures of any kind; in fact, throughout all the works of Plato the term "architecture" is hardly ever mentioned. Furthermore, this center of instruction was created not from an acknowledged necessity but as a gratuitous token of appreciation from that now endangered and almost extinct species, the wealthy donor.

The need for structures per se, however, cannot be minimized. The famous Library at Alexandria had to be adequately sheltered, and it is highly regrettable that fire codes did not exist at the time of its construction. In 1591 a 2000-seat hall was built in Padua to accommodate the throngs who came to attend lectures by Galileo. The Universities of Bologna, Cordoba, and Paris, though they may not even remotely have resembled the grandiose educational surroundings portrayed in Raphael's "School of Athen" were nevertheless housed in buildings, some of which are still in existence.

The preoccupation with structures of special character and their association with higher education in our own country is quite evident. It may be traced, in large part, to the universities of Oxford and Cambridge

in England. Their influence is clearly evident in the so-called "Collegiate" Gothic" style which appears frequently throughout our centers of learning. Within the last century a total of over 2500 institutions have been constructed, each in a particular "style", from well-endowed state and private universities to the most modest denominational colleges and technical schools. Forty-six such establishments exist in Connecticut alone, not to mention fifty-nine proprietary colleges and thirty-eight nursing schools. Each is characterized by its special programs and goals; all are distinguished by the extent and character of their facilities.

The constant demand for educational space in one form or another, accompanied by the yearning for some form of outward symbollism, has resulted in an unprecedented proliferation of buildings and facilities of every sort in every category. Many of these are presently under construction; many more are on the drawing boards. Meanwhile, millions of square feet (of which Connecticut is host to approximately 13.566) already exist, all inviting efficient usage but demanding constant maintenance, amortization, and defense against the spectrum of obsolescence.

In a period of unparalleled costs out of all proportion to the average institution's income, today's center for higher education is faced with the harsh realities of modern-day economies. One is reminded of Marc Hopkins, who stated that the optimum environment of education was the space occupied by a teacher and a student astride a fallen log. Tomorrow, in due consideration of student overpopulation balanced against devaluation, inflation, deforestation, the skyrocketing cost of lumber alone, plus the fact that today's donor is the unromantic taxpayer, it may be necessary to dispense with the log itself.

Thus, from the groves of Plato's Academy, we have come full circle.

A review of the facilities neccessary and desirable to accommodate the process of higher education at the standards we choose to establish could not be more appropriate or timely. This report will attempt to provide its basis.

At this point the Facilities Resource Group wishes to acknowledge the assistance of the many people who gave us information and the benefit of their insights. Special thanks should go to Dr. Kenneth R. Summerer of the Staff of the Regional Community College Board and Mr. Lucian L. Lombardi, Director of the Technical Colleges, for their fine presentations given at meetings of our group.

Introduction

The task of the Resource Group on Facilities is clearly expressed in the words of State Senator Ruth O. Truex, who stated recently, "We have accepted the responsibility to provide quality higher education for all young people who aspire to it. Now we face the challenge of meeting that responsibility within a framework of limited resources".

The phrase "a framework of limited resources" explicitly (though perhaps unintentionally) outlines the problem of facilities for higher education as it does, indeed, in the entire country. "Facilities" are the concrete framework which is needed to house the abstraction of promise, program, goal, and universal intellectural development. The chronic shortage of funds is the factor that makes this requirement a nagging problem rather than an idyllic creative experience.

While the aim of higher education is difficult to assess and impossible to predict, its visual image, at any given point in time, is frozen in the reality of square feet of brick, steel and glass, and innumerable square yards of asphalt paving, all subject to the tyranny of the dollar-sign.

It is not sufficient, by any means, to provide merely the bare bones of classrooms, labs, corridors, restrooms, and utilities. Without the indispensable list of concomitants which include the library, the student center, the auditorium, and the athletic field, today's educational center for higher education does not meet Senator Truex's strict specification of "quality".

Moreover, regardless of the quality of the program offered, its unbounded potential, or even its specific attainments, it is its physical envelope that is education's most prominent symbol. It is the structures

and the physical atmosphere that interconnects them that represent most strongly the public's faith in the validity of education and the soundness of its own investment.

For this reason the facilities for higher education throughout Connecticut should be reviewed in all their dimensions. Existing facilities must be reevaluated in terms of today's budgets as well as today's needs; new facilities must be planned on the basis of the total experience of a long past and in anticipation, to the extent that it is humanly possible, of the real needs and the valid desires of the future.

On the surface, the problem does not appear to be insoluble. It is made up, essentially, of a set of known factors consisting mainly of a student population, a faculty, a set of tools, and their mutual juxtaposition to achieve a desired result. It is the job of the facilities to shelter and facilitate the attainment of this goal. In the light of modern problem-solving technology, it does not seem impossible, at first glance, to devise a formula whereby, in a given instance, all related factors could be analyzed and coordinated and the result obtained through the efficacy and the exactness of the computer.

However, the problem is compounded by two factors:

First of all, standards must be established which reflect our relative posture in a nationwide perspective. Then, in acknowledgement of our democratic heritage, these standards must be applied in a manner which will ensure an equitable balance throughout the entire state. The student must enjoy a fair chance to achieve optimum development within the range of his abilities and his ambitions in any of the fields made available to him.

Secondly, within a budget which is perennially and universally "limited," the resulting capital investment, which must obviously be conducive to study

and development, must also meet state, national, and local criteria for environmental quality. Most important of all, it must stand up against the critical judgement of the supporting citizen.

Expressed in other terms, the facilities for higher education throughout Connecticut must be planned for maximumefficiency, they must be economical within reason, and they must provide an atmosphere in which the faculty and the students can do their best work and of which the taxpayer can be justly proud. Today's challenge is an echo, over some 1700 years, of Vitruvius's "Commodity, Firmness, and Delight" translated into function, construction, and beauty, at today's equivalent of so many denarii per square cubit.

The Resource Group on Facilities has chosen to deal with this aspect of the Master Plan under the following subheadings:

1. An overview of statewide facilities, current projects, and the status of individual master-planning;

2. A proposal to centralize the study of facilities needs for higher education by creating a continuing body empowered to review, evaluate, and make specific recommendations for the creation of new facilities;

3. A discussion on the danger of measuring space utilization by broad and irrelevant generalizations and the importance of applying new standards in the light of individual situations;

4. A reordering of the steps involved in the creation of facilities for higher education, from planning through funding, design, and delivery;

5. A comment on the environmental and esthetic impact of structures, the treatment of the spaces between structures, and their educational and psychological effect on faculty, student, and the passing taxpayer.

We have interviewed representatives from each of the various types of state institutions, as well as executives from private and proprietary schools.

We have refrained, for obvious reasons, from making specific assessments or detailed pronouncements. However, it is hoped that our report will offer

a clear record of our findings, and that our recommendations will provide realistic guidance in the formation of the final Master-Plan for the State of Connecticut.

Chapter I

The Construction Backlog

In the rising tide of higher education enrollments over the last ten years the public colleges of Connecticut have greatly expanded. Ten new public institutions were authorized by the General Assembly, four of these within the last three years alone. These developments have swelled the need for facilities to a degree beyond the ability of the State's mechanisms to provide them. In the face of this need the State and Nation experienced a sharp growth in inflation and rising construction costs. Concern for the growing State debt led to a moratorium on State construction. To date over $100 million in funds authorized for higher education facilities by the General Assembly remain unallocated.

Meanwhile, there is a range of unmet needs at existing campuses and many of the Community Colleges are without their own campuses, existing in leased facilities and temporary buildings. While some State standards call for an average of 68 (Florida Standard) assignable square feet for every full-time equivalent student at Community Colleges, Connecticut's Community Colleges struggle along on an average of 39 assignable square feet.

Looking to the future it is suggested by recent capital projections from each constituent unit that additional expenditures as high as $450 million may be needed for facilites over the next five years. Some of these facility projections are in anticipation of enrollment growth that may never materialize. However, others are for space, sitework, and other facility needs that are already existing.

It was not feasible in the time available to the Facilities Resource Group to review in detail the existing and projected facility needs in the State. Indeed, in many cases Master Plans and other data were simply not

available. Of the plans that were available, some appeared to us, out of date, others were inadequate in their detail. And yet it is clear to us that the State is looking for sound guidance on just how to treat their backlog of commitments.

In studying the range of facility issues, the Facilities Resource Group has concluded that the State's first duty is to provide for those institutions that are already in existence. It seems unwise for the State to undertake commitments to new institutions or new programs requiring substantial facilities without full awareness of the cost of facilities such action will entail, and a readiness to make funds available for them.

With respect to those projects already designed and funded the Facilities Resource Group recommends that the Governor give clear and immediate guidance as to the availability of capital funds for each of the constituent units of higher education, based upon the evaluation of the facility priority recommendations made and submitted by these units this past year.

Further, in recognition of the volume of needs, it is recommended that the Commission for Higher Education in collaboration with the Boards of Trustees of the constituent units establish a pattern for capital construction that: (a) lengthens out the program of development of the Community College system; (b) insists on a slower plan of facilities development for the University, State, and Technical Colleges; and (c) defers commitment to new programs that require new facilities.

Chapter II

The Central Facilities Process

The Facilities Resource Group, soon after deliberations began, recognized that a critical part of its work was an assessment within higher education of the present facility process. A subcommittee was appointed to study these matters in detail. Three questions emerged:

1) What is the existing facilities process?

2) In what way is the existing facilities process deficient?

3) What improvements can be made in the existing process?

Existing Facilities Process

The process for developing buildings and facilities for higher education is long and complicated. It begins at the institutional level where facility needs are expressed in specific terms as a request for a series of projects. These are then submitted to the institution's Board of Trustees for evaluation and approval.

Subsequent to this approval, the request is forwarded to two separate agencies of government 1) the Budget Office (representing the Executive Branch), and 2) the Commission for Higher Education (CHE).. The latter agency reviews and recommends with a concern for establishing overall higher education priorities. The former agency, in consultation with the Public Works Department provides information upon which the Governor can base his own capital budget request for the State as a whole.

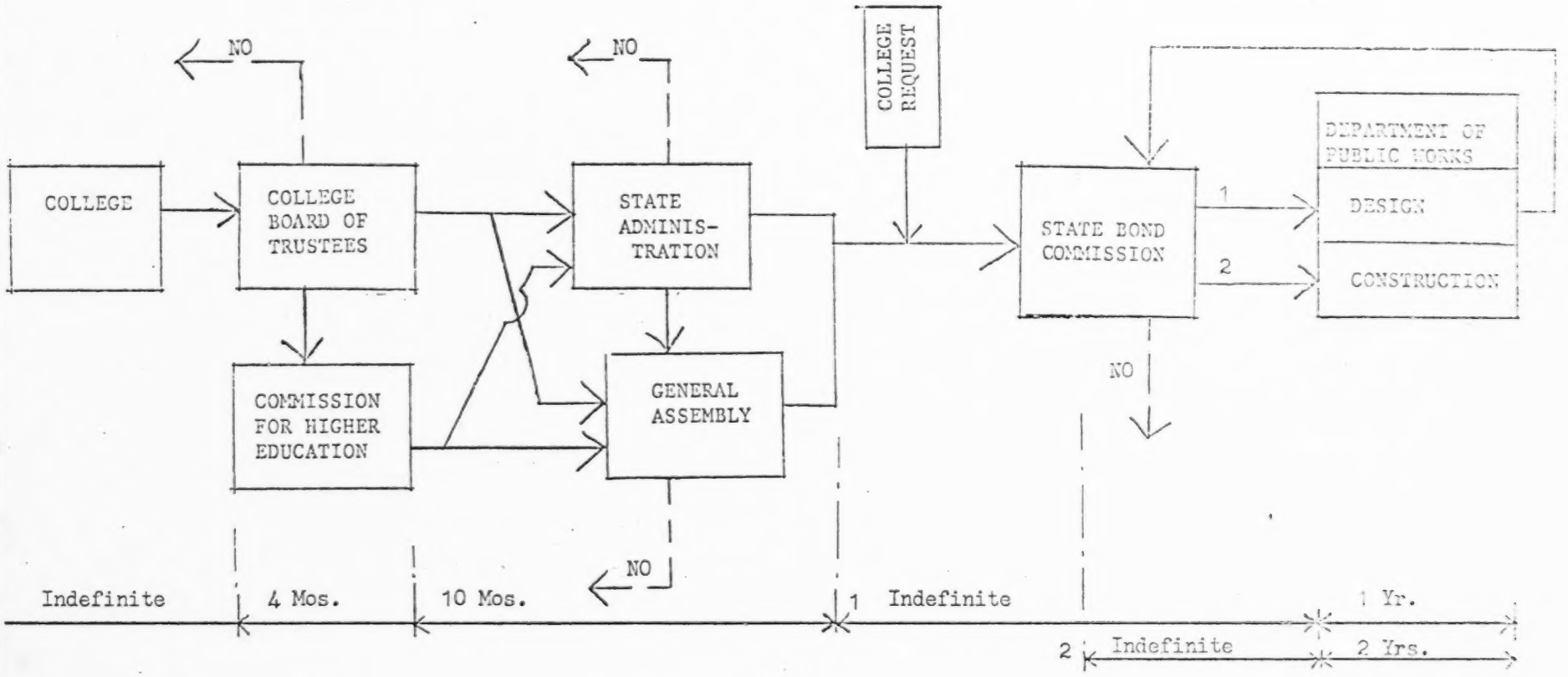
The General Assembly then responds with funding authorizations based on its own, often independent evaluation of the original recommendations of the Boards, and that of the CHE, and the Governor.

Once the Capital Budget is passed and signed by the Governor, the respective State Agency is in a position to file a formal request with the Department of Public Works for the commissioning of architects and engineers to be assigned a particular project. This in turn is followed with yet another review through the State Bond Commission, which is reflective of the views of the Governor and Commissioner of Finance and Control. If that Commission then determines once more that the project is warranted, funds are allocated to the Public Works Department which designates an architect and supervises the preparation of plans. Later, when the project is designed, a further appeal must be made to the Bond Commission to allot authorized funds for construction. Diagram I is an outline of this process.

In 1968 the Public Works Department in consultation with the State Budget office recommended a two-stage funding procedure. Accordingly, the first request for fund authorization was to cover architectural planning. Later when plans neared completion, a second request for fund authorization was made for construction. This concept, besides making possible more precise information on the construction cost of a project, gave all reviewing agencies and the General Assembly two opportunities for evaluating any project.

In terms of time, the process from the point where a constituent unit Board approves a project to the point where funds are alloted for architectural design requires a minimum of one year and often extends from 18 months to two years. An additional three years is usually required until a facility is actually completed and in use.

DIAGRAM 1. EXISTING PROCESS OF FACILITY REQUEST APPROVALS



Chapter 2 - Criticism of Existing Process

To the degree that the process described enforces long-range planning and thoughtful representation of need, it is desirable. But there are a number of shortcomings built into the process that operate at various stages and in general.

To begin with it must be recognized that in contrast to the private sector (wherein the formulation of plans and later effectuation are encompassed within one organization,) public agencies must work with an array of reviewing agencies which have separate objectives and special procedures. The net effect is one of delay and even paralysis in meeting institutional needs. In the interim, the forces of inflation erode authorized funds and projects can no longer be built without drastic cuts in building space or compromise in function. The result is a substantial penalty both to the taxpayer and user agency.

Granting the need for these reviews, the Facilities Resource Group was impressed by the following shortcomings which we believe contribute to the difficulties within the process:

-- there does not exist commonly accepted space and facility standards to which higher education agencies and State administration officials mutually subscribe.

-- there does not exist at the institutional level an ongoing authorized coordinated planning process that can continually come to grips with changing needs and purposes and their effects on facilities needs.

-- there does not exist at the systemwide level of higher education an authoritative advisory body with staff, expertise, and responsibility to devise and establish standardized procedures of facilities programming, to gather sufficient data on the quantity and quality of facilities, and to advise on priorities based upon constituent unit plans. Such authoritative groups as exist presently reside within the Commission for Higher Education and the Department of Public Works. Neither are adequate for the task as envisioned.

-- there is an uncommonly long period required to produce facilities even after funds are allotted for design and construction.

The difficulties of the existing process are perhaps reflected in the original establishment and later abandonment of the State Building Program Commission, which served for over two decades as an advisory agency to Governor and Legislature in matters relating to the need for facilities. This Commission was established in an effort to bring to bear sound judgements on the need for State facilities. While the Commission did attempt to develop responsible, independent recommendations based on its own review, it was inadequately staffed and funded to handle its important charge. Consequently, its advice tended to be simply corroboration of the political mechanism and was regularly disregarded on the basis of inadequacy. While this Commission was recently abolished, the problems it sought to resolve remain. It is thus clear that an adequate facilities process is needed.

A Central Facilities Process

In seeking to develop a more adequate facilities process, the Facilities Resource Group was impressed by the following valid concerns:

-- The failure of the existing process that has on the one hand found it difficult to weigh competing claims for facilities and on the other hand has produced a system that is highly bureaucratic in its effect.

-- The need to permit institutions themselves to determine their facilities needs and defend them responsibly before not only the Commission for Higher Education, but also the State at large.

-- The need to recover a more orderly process, one that acknowledges a place for adequate long-term planning and provides essential staff and funding for this planning process.

-- The need to accelerate the delivery process so that facilities are put into place within reasonable time frame.

-- The need to relate this process to an understanding of the fiscal constraints under which the State as a whole must operate.

The Facilities Resource Group has concluded that to take due account of these matters, both the State and the respective institutions of higher education are best served, not by adding new administrative agencies to those that already exist, but by taking corrective action within three existing levels of the process: 1) the State system of higher education, 2) the institutions and component Boards of Trustees, and 3) the delivery process as it involves the Department of Public Works. Each will be discussed in turn, but before doing so it must be noted that there are some additional correctives that must be applied of a technical nature such as space standards and comprehensive planning procedures. These latter aspects will receive attention in later chapters of this report.

Level 1 - To cope with facilities problems as they relate to the system-wide level it is recommended that a professional staff be organized within the offices of the Commission for Higher Education to serve the Chancellor in a staff relationship to his office. We have chosen to call this division a Central Facilities Group.

In order to function effectively such a group should have direct access to the Chancellor and his staff and should be intimately familiar with the goals and constraints that are a part of higher education in Connecticut. Such a group will require a staff that is both experienced and able. In order for it to perform usefully it must be properly funded. The group also should have its own Advisory Board,representative of the various units of higher education and other State interests to be appointed by the CHE. (Later in this chapter a recommendation is made that the existing Commission on Aid to Higher Education be transformed to serve in this capacity.)

The responsibilities of this Central Facilities Group should be defined as follows:

-- Accumulate and maintain satisfactory facilities data on all agencies of higher education in Connecticut. Not only would this include inventories of existing facilities, but also data on space utilization, a compendium of facility master plans and future facility requirements.

-- In cooperation with the Public Works Department, establish appropriate building and space standards for Connecticut. (Until the time such standards can be suitably defined, we suggest immediate consideration of the usefulness of some other State's standards. See Chapter III .)

-- Devise a standardized system of programming procedures to be utilized by all higher education agencies in order to strengthen performance on the part of such agencies and to provide a measure of comparability in evaluating capital budget requests.

-- Develop satisfactory familiarity with the facility needs of each agency and out of this familiarity be in a position to recommend priorities to its own Advisory Board and then, to the Commission for Higher Education itself.

-- Seek out and illuminate State fiscal plans in the capital program area to give all units an understanding of the fiscal constraints under which the State as a whole must operate.

There continues to be an important reservation about this arrangement. As a group, we are concerned over the natural tendency to equate organizational centralization with effectiveness--thus seeking a centralized structure of governance at the expense of essential diversity.

So, while the Facilities Resource Group recommends the structure here described, a staff arm of the Commission, available to the Chancellor and Advisory to the Commission itself, it forewarns of the dangers of centralization and urges sensitivity to the need to repose greater competence and strength within the several Boards of Trustees and Executive Staff of the four constituent units of Higher Education. It is for this reason

that we now describe the second level of the facilities process that operates in a decentralized manner at the institutional and Board of Trustees level.

Level II - In order for the Central Facilities Group to function properly within the facilities process, appropriate plans and information are required to be prepared at the institutional level where the range of considerations such as enrollments, academic programs, shared facilities, contract programs, regional resources, and systemwide plans can be specifically brought to bear.

We therefore recommend the following:

-- That funds be appropriated to the Boards of Trustees of each constituent unit to permit the understanding of satisfactory planning. It should be the responsibility of each Board to identify the funding needs for such purposes as part of its General Fund Budget Request.

-- That each constituent unit employ appropriately trained professional personnel who in turn can be responsible for working with the individual institutions, and where necessary, with consulting firms, to treat questions related to specific facility needs, utilization of existing facilities, and other overall facilities requirements of the individual campuses.

It should be stressed that to implement an effective planning effort along the lines described will require adequate funds. It is suggested that the proposed Central Facilities Group could assist in identifying the appropriate scale of this funding, but we state again that these funds if appropriated should be assigned to the Boards of Trustees of the individual constituent units for administrative responsibility. Only in this way can the individual colleges adequately respond to the distinctive needs of their students and community as well as preserve their own unique identity. It is believed that an adequate facilities process must make this possible within higher education.

Level III - Since the role of the Department of Public Works is crucial within the facilities process, we have felt a concern to try to define a more effective future role for it in the delivery of higher educational facilities.

It appears to our group that this Department has been handicapped on the one hand by its lack of full authority and,on the other, by inadequate familiarity with the long-term objectives of higher education, at least as they relate to facilities. No doubt, the development and maintenance of up to date academic and physical plans for each institution will aid the Department in establishing that familiarity and minimize misunderstanding of objectives.

Nonetheless in relation to higher education we prefer to recommend a more defined and discreet role for Public Works, one substantially limited to the design and delivery of specific facilities rather than responsibility for the development of broad purpose plans. (In a later chapter of this report we will have specific recommendations on the process of the design and delivery of facilities.) In connection with the facilities process we expect that the Public Works Department will continue to take up its assignment in the usual way. However, we recommend:

-- That the Public Works Department be strengthened in terms of staff so that it may properly relate to the work of the proposed Central Facilities Group. We therefore endorse identification of an additional Deputy Commissioner and perhaps some supporting staff that could become expert in this area of the State's facilities needs. The top leadership in the Department of Public Works should thus have every opportunity to participate in and be familiar with the processes developed by the Central Facilities Group. (This suggestion is in distinction to the model developed in New York State whereby higher education was handled by a separate Building Authority. We feel Connecticut can and should avoid new agencies of government in this area.)

— That the Public Works Department develop effective liaison with the Central Facilities Group in strengthening use of common design criteria and standards among different campuses, and in making use of the private sector in developing facilities as in some of the successful lease/purchase techniques used recently in higher education.

Commission on Aid to Higher Education

In recommending a Central Facilities Group with its own Advisory Board to be appointed by the Commission for Higher Education, we have been aware of the model of the Commission on Aid to Higher Education and believe its format worthy of study and emulation.

The Commission was established in 1963 to supervise and monitor a range of newly-legislated Federal programs related to higher education. These programs were concerned not only with facilities, but also with certain kinds of equipment as well as the Community Service Program (in which Federal-matching grants were awarded to respond to a wide range of community-oriented problems.)

The Commission's staff consists of a director and supporting clerical assistance, and budgeted with Federal and State funds. In addition to serving as a conduit for Federal funds to public and private institutions of higher education. The agency contracted with the Commission for Higher Education for other data gathering arrangements.

The Commission has performed a useful service over the years. It has responsibly monitored millions of dollars of Federal funds and is conversant with the building programs on most campuses throughout the State. With its present familiarity with educational facilities, the staff of the Commission represents a qualified resource for implementating the capital building process as it relates to higher education.

Now that there is legislation to transfer the responsibilities of the Commission on Aid to Higher Education to the CHE we recommend that this legislation be supported so that:

-- Its staff be transferred to the Commission for Higher Education (from its present organizational location within the Office of Finance and Control.)

-- That the staff be assigned in consultation with the Chancellor for Higher Education to the appropriate offices within the Commission, noting that the Central Facilities Group might include one or more members of this staff.

-- That the Commission on Aid itself be restructured at the discretion of the Commission for Higher Education to serve an an Advisory Board to the Commission in matters relating to facilities. Such an Advisory Board should be helpful in reviewing recommendations relating to facilities as they move forward from the staff to the Chancellor, and then to the Commission itself.

Costs and Savings of Facilities Process Recommendations

While recommendations such as the establishment of a Central Facilities Group, the addition of planning personnel to constituent units, and an additional Deputy Commissioner and others at the Department of Public Works appear to require a considerable investment in additional personnel, they will effect substantial savings in the long run. At the very least, by expediting the delivery process the reduced inflation factor alone represents a considerable savings. Thus, for example, if higher education is authorized $30,000,000 in construction funds in a given year, it could be imagined that savings of 10% or $3,000,000 might reasonably mature if the present five year delivery experience is reduced by a single year. This in our Committee's view, is not an extravagant objective and might indeed be the overriding gain to be achieved through such a process.

Chapter III

Facility Utilization and Standards

If a facilities process is to function properly, it is essential that there be substantial agreement among agencies of higher education and State Administration on standards governing performance and space allocation for various functions. The Facilities Resource Group therefore set up two separate subcommittees to study issues in these areas. The first subcommittee explored issues concerning classroom and laboratory utilization. A second subcommittee reviewed issues concerning space standards. The findings and recommendations of each committee are presented below.

Utilization of Classroom Facilities

Classroom and laboratory utilization studies are the most common means of evaluating facility use in higher education. It is not difficult to find the reasons why.

The rationale for such utilization studies is relatively simple. Reasoning proceeds as follows:

-- The function of Colleges and Universities is to teach.

-- Teaching is carried out in classroom facilities.

-- Therefore, a measure of classroom use is a measure of the efficiency of facility use.

The actual utilization technique itself is equally simple. Basically, it is a measure of the degree to which an institution succeeds in making use of the total hours of classroom availability during the regular weekly schedule and within the actual hours of room use, a measure of the use of each chair or student station in the room. Thus, institutions recording high levels of room and seat use are said to be using their facilities well.

Low scores are evidence to the contrary and suggest the potential of accommodating additional enrollments.

Given the simplicity of the technique and its easy application, State government officials and legislators across the country have used it to monitor higher education facility use. The State of Connecticut is no exception. In 1971, using a modified form of utilization technique, the Governor's Commission on Services and Expenditure--the so-called Etherington Commission--alleged low levels of classroom use at Connecticut's public institutions of higher education. This suggested inefficiency and available enrollment capacity at existing institutions.

With the above background, the Facilities Resource Group spent a considerable portion of time reviewing the issue of classroom utilization and its relationship to institutional enrollment capacity. A subcommittee was appointed to investigate the matter in detail. The following were the main findings of this investigation:

-- Classrooms and laboratories often account for less than 30% of institutional space (e.g., CCSC 15%, UCONN 26%.*) Measurement of classroom use alone therefore gives an incomplete picture of institutional space use.

-- The physical capacity of an institution to accommodate enrollment is not dependent on classroom space alone but relates to a range of classroom and support facilities.

-- There are ample and warranted internal reasons why higher education institutions score considerably less than 100% in classroom and station utilization. For example, the optimum standard of general classroom day use across the country has been found to be 75% of theoretically possible hourly use with a 60% rate for station occupancy. An even lower optimum standard of hourly use is common for laboratories--50% of theoretically possible hours available though with an 80% station occupancy. Taking such factors into account, recent studies compiled by the Commission for Higher Education indicate most of Connecticut's public colleges make comparatively good use of their facilities.

*Compiled from data in the Comprehensive Facilities Inventory, Report IV, (Fall 1971), published by the Commission for Higher Education.

-- Program changes over time may radically alter the need for specialized laboratory spaces creating surpluses in some areas and shortages in others and yet leave an institution with overall low laboratory utilization scores.

-- The classroom utilization technique is not designed to take into account special circumstances that are indispensable for proper interpretation of data. For example, while utilization studies at the Groton Branch of the University of Connecticut indicated low levels of classroom utilization, the fact is that this oversized campus and its substantial building space was purchased from the Federal government complete at a most economical cost to the State. Also for example, utilization techniques do not differentiate quality of space. Thus inadequately ventilated, oddly shaped spaces, or those otherwise unsuited for full use are treated in studies as the equal of adequate classrooms and may hide actual need for new classroom space.

In the light of these findings the Facilities Resource Group has concluded the following:

1. Utilization measures of classrooms and laboratories alone are unreliable as an index of efficient space use or of the potential for additional enrollments. Such studies, if they are to be used, must be set in a proper context and correlated with additional information to prevent misinterpretation.

2. Classroom resources alone, as indicated by utilization scores, are an unreliable guide to the potential of enrollments at a given institution.

In spite of the shortcomings and misuses of classroom utilization studies, these can be valuable to institutions, their Trustees, and to a Central Facilities Group. It is therefore the recommendation of the Facilities Resource Group that (a) utilization data from both public and private institutions continue to be gathered; (b) that the Central Facilities Group within the CHE be charged with responsibility for insuring its accuracy and relevance; (c) that this same group recommend to the State appropriate standards of utilization; and (d) that the CHE

improve its own comprehension of the meaning of utilization data and its appropriate context so that it is in a stronger position to relieve some of the misguided public apprehension over existing conditions.

Etherington Report on Utilization

The Report of the Governor's Commission on Services and Expenditure, the so-called Etherington Report, has been critical of classroom utilization at the public colleges and the University. Since its findings have received widespread attention, it was felt that this aspect of the report should be commented upon by the Facilities Resource Group.

The Etherington Report in its work on classroom utilization measured seat occupancy of classrooms alone regardless of whether a particular room was in use or not. It then related its finding to a national standard that was incommensurate with its methods. Given these findings, the Etherington Report, as it relates to the evaluation of classroom utilization at Connecticut's public institutions, must be discounted as an authoritative assessment due to what appear to be serious errors in its methodology.

Facility Standards for Higher Education

At the outset it became clear that within the existing system of developing facilities some important underlying assumptions about the relation of the State to its responsibilities in the facilities area had become obscured. Therefore, it appeared imperative that once again these assumptions be clearly articulated.

To begin with, the State provides to the people of Connecticut a range of services to promote the general welfare of the commonwealth. To do so considerable numbers of people are employed from whom the State

expects high standards of performance and dedication. In recognizing the State's right to the best efforts of its employees, the Facilities Resource Group also recognizes the reciprocal obligation of the State to provide proper facilities for employees to carry out their role.

Furthermore, in higher education this obligation appears to be two-fold. It is not only an obligation to employees but an obligation to the public that is served in those facilities; for it is a characteristic of higher education that it maintains prolonged and intimate contact with its clients. The conditions and quality of that contact as they pertain to facilities are therefore important considerations in any examination of facility requirements. Poorly housed functions and dispiriting surroundings not only affect operations but cast a pall upon the very value of education and its purposes.

This latter observation was confirmed again and again in discussions held with representatives of the constituent units. For example, in the case of the Technical Colleges, the Facilities Resource Group was persuaded that these institutions are adversely affected by a physical plant that appear more closely related to older high schools rather than a part of post-secondary education. While the Technical Colleges appear to have adequate laboratory facilities, regularly absent on such campuses are the student spaces that bring young people and faculty together in a relaxed and pleasant atmosphere characteristic of higher education. Thus at a time when skilled technicians are needed by society, young people are discouraged from securing training at institutions that appear to be merely extensions of their high school experience.

If the interests of the users of facilities and of those whose responsibilities are to provide them are to be safeguarded, it is important

that there be agreed upon standards of facility space for various purposes. Such standards are to be used within the academic phase of facility planning. Thus as academic programs and services are identified within the academic plan, their space implications can be readily computed. In practice, it is conceived that special cases may make occasional departures from standards advisable and here the Central Facilities Group would be involved in such judgements.

The subcommittee on standards reviewed a number of standards from different states, including those developed by the Planning and Management Systems Division of the Western Interstate Commission for Higher Education in their series named Higher Education Facilities Planning and Management Manuals. These appeared to be well considered and complete. Representatives from thirteen Western states participated in its development. It is recommended that these standards be studied and if necessary modified for use in Connecticut.

In lieu of such acceptance, it is recommended that the State of Connecticut fund a study by professional planners to develop its own appropriate standards. In doing so, the process should include representation from the constituent units of higher education, as well as representatives from appropriate State agencies.

Before leaving this subject, a few words ought to be said about a related aspect: the range of facilities appropriate for development at any one institution. Beyond the academic purposes of institutions there are other supporting and ancillary purposes arising from the nature of institutions dealing with large numbers of young people and with the community at large. These and other needs, and their intensity, are

established within the academic planning process of an institution. If the academic planning process is done well, such needs ought to appear with clarity to be developed according to space standards adopted by higher education.

Chapter IV

Comprehensive Planning

In the preparation of this report the Facilities Resource Group heard representatives from the various constituent units of higher education who spoke in some detail on the methods and procedures used to develop statements of facilities needs at the various institutions.

It became apparent to the Facilities Resource Group that these methods and procedures are critical to an adequate facilities process. Thus the difficulties that we faced in evaluating facility needs in specific cases could in some measure be traced to the fact that adequate, up-to-date plans for institutions generally did not exist. Those that we did find varied in terms of depth and comprehensiveness which probably depended upon the availability of funds for consultants to prepare the plans. Also, many of the plans were based upon academic program assumptions that are at least three years old and in need of revision. It was also observed that the fiscal outlook of the State had changed considerably over the past few years owing to unusual inflationary forces. Plans, if they are to be relevant, must be updated to take account of such factors.

If the facilities process recommended earlier in this report is to function properly it is imperative that planning procedures of a comprehensive nature be officially instituted at all institutions for which State funds for facilities will be expended. Such comprehensive plans must include both academic and physical plans, which should be developed at the level of the institution with appropriate input from other agencies a part of the process.

Diagram II on the following page illustrates the process of planning and notes the range of participants within the various stages.

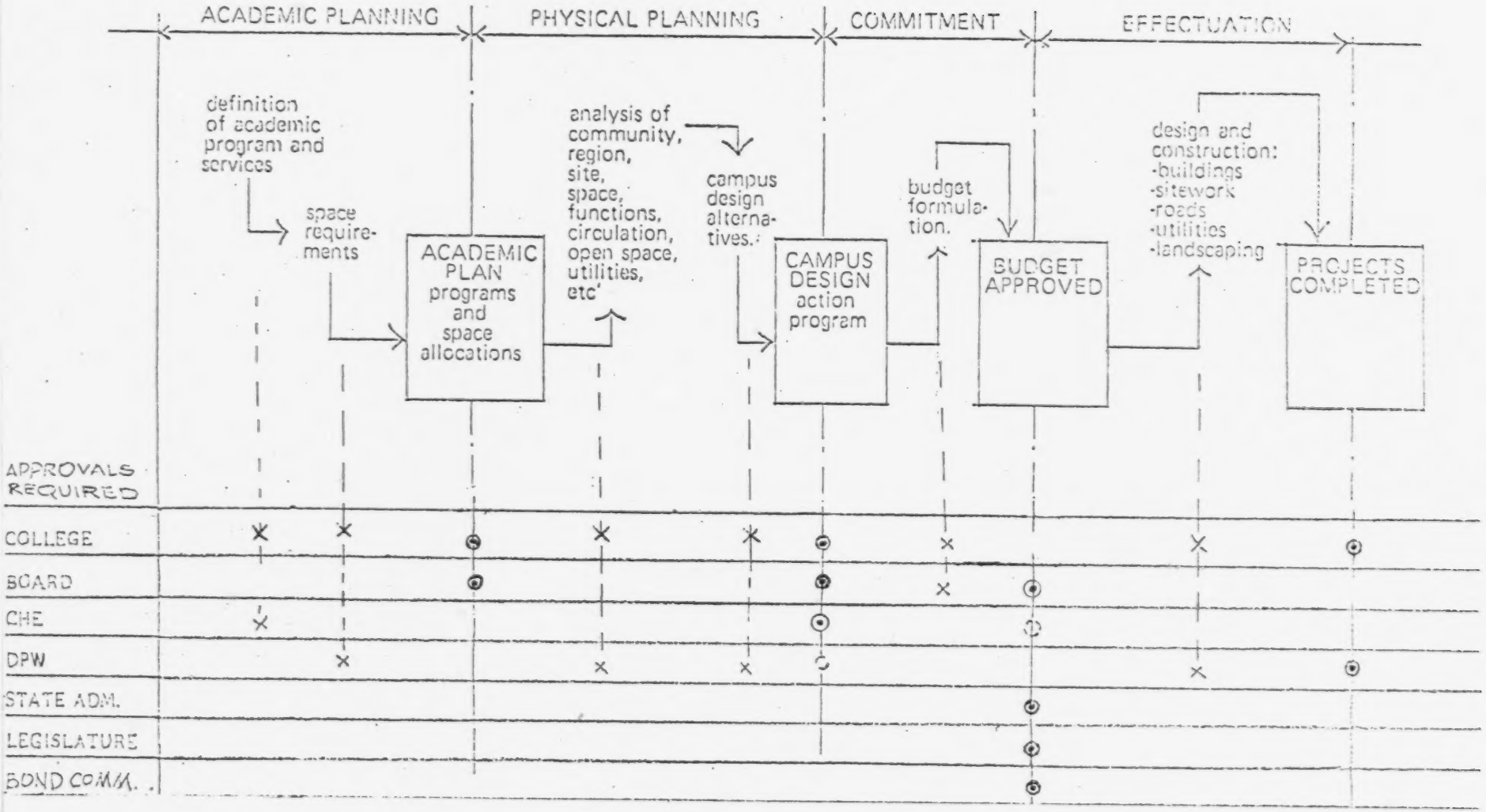
It is within the academic planning phase that the wide range of considerations relating to such things as enrollments, academic programs and services, shared facilities and contract programs, off-campus instruction, technological changes in teaching methods, trimester or quarterly terms, and a host of others that can usefully be brought into focus and related to facility needs.

It is within the physical planning phase that the academic plan statements of facility needs can be adapted to the specific locale of a campus, and the utility, traffic circulation, parking, aesthetic, and environmental dimensions of the physical campus can be anticipated, shaped, and provided for.

The above process of academic and physical planning must be repeated in a regular cycle that takes realistic account of the pace of change within a given period and provides opportunity for feedback from earlier cycles. It is expected that academic plans will be updated every year or two with physical plans updated at longer intervals depending upon the implications of academic plan changes.

Before leaving this subject it should be stressed once again that the preparation of academic and physical facility plans are tasks requiring the participation of skilled and experienced professionals. Funds are required to make such participation possible, and should be allocated to the constituent units for this purpose.

Diagram II. COMPREHENSIVE PLANNING PROCESS AND PLANNING PARTICIPANTS



◉ - Approval required ○ - Recommendation only X - Participates in

Chapter V

Private and Regional Resources

The Facilities Resource Group, in investigating alternative ways of providing for facility needs within public higher education, which remains the primary responsibility of the State, is persuaded that there are substantial resources within the private sector of higher education including proprietary schools and within the geographic regions of the State. These resources are discussed below.

The Private and Proprietary Sector

The Facilities Resource Group looks upon all post-secondary education as part of one system, whose role is to serve the needs of the people of Connecticut. The group was greatly impressed with the availability of educational resources in the private sector particularly within an often-neglected sector, that of the proprietary schools. Thus if facilities in the private sector can be shared with public colleges or indeed if entire programs can be contracted using already available private resources, there could well be a reduction in the burden of facility needs in public higher education.

Having recognized in general the potential advantages of partnership with the private sector, the Facility Resource Group also recognizes that the effective use of such resources require in depth solutions to the academic, administrative, economic, and logistic problems that such a partnership may impose. It is believed that these separate problems may be properly resolved within the previously recommended academic phase of institutional planning and could result in statements of facility need considerably reduced in scope and costs while yet providing adequately for an enriched array of educational needs.

It is therefore the recommendation of the Facilities Resource Group that wherever feasible and desirable in the development of higher education in the State, and in the planning of individual institutions, due account shall be taken of the resources of the private and proprietary sectors of higher education to make use of the possibilities of joint use and sharing of facilities through contract programs.

Regional Resources

Using similar assumptions as cited above under the Private and Proprietary Sector, the Facilities Resource Group is persuaded that in addition to resources within the private sector of post-secondary education there are resources in institutions that are not strictly a part of higher education. Such institutions may be museums, television stations, planetariums, zoos, and the like. Where such resources are available in a particular geographic locale there is the potential for educational enrichment to the benefit of the region and State.

The Commission for Higher Education in conjunction with public and private institutions has identified six regions which have already been in operation for a considerable period of time and it appears desirable that such regional units serve as the focus for investigations of regional resources and the collection of data.

Given these findings, it is the recommendation of the Facilities Resource Group that data on facilities and educational resources should be compiled by regions to be used in the planning process so that they may lead to the optimum utilization of resources, and in the optimum development of higher education within a region.

Chapter VI

Auxiliary Fund Facilities

In the original queries from the Commission for Higher Education the Facilities Resource Group was asked to explore issues concerning auxiliary fund facilities. The major distinction between these and other facilities is that while most facilities are financed through the general fund of the State, auxiliary facilities are financed through college fees paid each semester by students. In the past, the type of building financed in this way has been the non-academic facility such as student housing, student unions, and parking garages. The following sections discuss aspects of auxiliary facilities.

Funding

One of the profound problems facing the constituent units relates to the funding of auxiliary facilities. While such issues of finance were considered beyond the charge of the Facilities Group (we have requested that the Finance Group explore this matter) we feel it imperative to present our comments from the facilities perspective.

We note that construction costs have simply outdistanced the ability of students on many campuses in Connecticut to finance these much-needed facilities within the present fiscal approach. These approaches are burdened by a limited twenty-year bonding period that does not adequately spread costs over the decades of students who will use the facilities. A simple corrective is, of course, to increase the length of the bonding period. This will spread the payment of costs over time and at the same time will enable a given fee income to support a larger total of bonding funds. If present funds to pay for auxiliary facilities are already at

their limit, short of raising college fees, increasing the bonding period is one way to make available additional capital funds. It is suggested that this approach be explored.

Another approach to auxiliary fund facilities is to reduce the types of facilities within its category. Presently, Student Unions are considered non-academic facilities. However, it appears to us that Student Unions are necessary and desirable facilities on any campus and might be every bit as important as so-called academic facilities in the lives of students. We note that in the 1971-73 recommended capital budget of the CHE it was proposed that a Student Union facility at Western Connecticut State College be supported by the General Fund. If that recommendation were favorably acted upon and if all future Student Unions were so funded, the total burden within auxiliary facilities would be substantially reduced. We, therefore, respectfully support the recommendation of the Commission for Higher Education and further suggest that consideration be given to extending General Fund support to Student Unions.

In lieu of, or in addition to such changes in the existing funding approach, the Facilities Resource Group wishes to note the possibility of augmenting existing funds for non-academic facilities through the tuition fees that are already levied on Connecticut public higher education students. Thus assuming that 60,000 students in the public system pay an average tuition of $300 per year, yearly yields of $18,000,000 can be expected which will support over $300 million in twenty-year bonds and far more in thirty-year bonds.

If all or part of this money were set aside in a Facilities Trust Fund, it could pay for well conceived plans and systems of priorities to

eliminate waste and to make optimum use of funds with respect to construction, market conditions and project readiness that saving costs due to inflation and rising construction costs. (Some systems of higher education notably the New York State University system and the City University system use student tuition for the purpose of issuing bonds for construction of all higher education facilities.)

In discussing this proposal grave reservations arose as to whether such a system eliminates legislative control or would generate a force of its own that would in itself lead to waste. On the positive side, some Resource Group members cited that the very process of comprehensive planning where all projects require proper justifications would itself pose a restraint. Also, the Governor through the State Bonding Commission could impose still more restraint and it is conceivable that even other restraints could be built into the process.

Considering the foregoing, the Facilities Resource Group recommends that the newly-imposed tuition payments be segregated to provide a Self-Liquidating Facilities Fund with which to finance such non-academic facilities across the State and the term under which bonds are sold for these projects be lengthened from the present 20 years to 30 years.

Student Housing

The specific issue of student housing has been raised in the original queries presented to the Facilities Resource Group. The following is a summary of the group's considerations.

Presently UConn and the State Colleges are the only public units of higher education that build student housing. The need for such housing is in our judgement a programmatic matter that is probably best evaluated

in the context of the academic planning phase of the recommended institutional comprehensive planning process. However, there are some aspects of student housing that we believe are worthy of comment from our perspective.

First, it does seem apparent that, whatever the educational merits of student housing, if some campuses are to grow and to serve statewide needs, the availability of student housing could be a critical facility to make such growth possible. Hence, housing is not a peripheral issue to institutional development, a frill, but rather an important consideration in fulfilling an institution's mission and goals.

Second, with respect to housing styles, it is apparent that many students are rejecting the older concept of dormitory living on campus. Many prefer living together in small groups within apartment-type dwellings. We support such developments. The new living patterns properly recognize the student's need for security, privacy, and individuality in his living space. We suggest that in the case of new housing, if built, thought be given to designing all units in the form of apartments with kitchenette facilities. This we believe is a way to insure against early obsolescence in facilities which can house others when they are no longer needed for students. Also, where feasible and warranted, existing dormitory facilities might be considered for renovation as apartments.

Parking Garages

The issue of parking garages appeared to the Facilities Group as one worthy of discussion in the context of non-academic facilities. Here in Connecticut on grade parking facilities as part of campus development are acknowledged as legitimate and proper but only to a degree. Thus, while

all institutions provide some parking accommodations not all provide for these needs adequately owing to the unavailability of land or funds or both.

It is true that there are ecological arguments that favor the support of mass transit. In some areas of the State and in certain circumstances such support is commendable. However, in general, it appears that owing to the locations of campuses and to the absence of adequate mass transit facilities, parking facilities are indeed necessary to serve the needs of students, faculty, and staff. It is also important to note that the neighboring community is also affected by inadequate parking facilities on campus. For it is the contiguous neighbors that too often must suffer the congestion and blight brought on by the failure to provide adequately for parking.

It therefore appears worth mentioning that campus plans should make proper and adequate provision for the accommodation of parking need. Appropriate standards should be established by the proposed Central Facilities Group. If institutional land is not available for such purposes, where need warrants, serious consideration should be given to the construction of parking garages which could at times provide optimum solutions for the economic, political, and logistic problems that the problem of parking tends to generate. The difficulty here is that, unless such garages are supported through the regular general fund capital program, the smaller campuses cannot afford such needed facilities financed through a pay-as-you-go basis. It is therfore suggested that the earlier proposed Self-Liquidating Facilities Fund be used to provide financing for such facilities.

Chapter VII

Selection of Architects

The design of a building is a complex matter requiring the coordination of many skilled professionals. As such, the process of building design and construction necessarily requires the participation of individuals capable of judging the ongoing performance of such professionals. The Public Works Department has in the past provided such judgements of professionals and the Facilities Resource Group believes it should continue to do so. However, there are two aspects of facilities which are not narrowly technical in nature but are, nevertheless, of overriding concern to institutions.

The first of these is the programming of facilities--that is, the proper selection of the various types of classrooms, offices, support spaces, and equipment that serve general and specialized college needs. With respect to these program elements, we believe that the institution has the best vantage in determining its requirements as these ought to be finally reflected in the designs of buildings.

The second aspect is that of the visual character of a facility and its suitability to the environment of the campus. Here again institutions are closest to prevailing sentiments on campus of what that character ought to be. Since it is they who must live with the final result, it is desirable that they have a significant voice in deciding such matters.

If the institution is to have some responsibility for the achievement of adequate programming and visual character, it is important that it develop a relationship of confidence and rapport with the architect. Giving colleges a significant role in the selection of architects is, we believe,

an important and necessary way to insure that a proper relationship be established. For others to have sole responsibility for selection could jeopardize this relationship and undermine desirable responsiveness to the needs of the institution.

One way that selection might proceed is for the Public Works Department to provide a list of qualified architects--screened for their skill and experience in performing a proposed commission--with the president of a campus then making the final selection. Such a process could do much to safeguard the many interests involved in the design of a facility.

Considering the foregoing, the Facilities Resource Group recommends that the president of an institution shall have a significant voice in the selection of all professionals engaged in the planning, programming, and design of campus facilities.

Chapter VIII

Physical Facilities Delivery

After academic and physical plans are created and projects are identified, the following phase deals with the actual design and construction of facilities. This phase is referred to in this report as the Physical Facilities Delivery System. This phase is solely administered by the Department of Public Works, which supervises the development of architectural plans and the construction process, and whose Commissioner appoints all professional consultants.

This physical facility delivery phase is particularly important for if it lacks in skillful or efficient execution, the cost of a project may rise or its performance characteristics may be impaired both functionally and as an environmental amenity. The effect of poor performance is to reduce the amount and adequacy of facilities available to higher education. A subcommittee was therefore appointed to study the matter and give its recommendations.

In general it was found that due to factors beyond its control the Public Works Department has not always operated in an efficient manner in the production of facilities for higher education and that there appeared to be opportunity: (a) to speed the process of design and construction through a streamlining of procedures; (b) to explore new techniques of design and construction; (c) to develop increased use of the private sector through leaseback and other contractual arrangements; and (d) to save substantial money through elimination of unnecessary delays occasioned by the present process. It is therefore a recommendation of the Facilities Resource Group that the organization and operations of the Department of Public Works should be reviewed to the end that it may make optimum use of methods and approaches

to improve its effectiveness in facilities delivery in terms of speed, quality, and economy. Some details of suggested methods are discussed under the headings that follow.

Construction Management:

In the past few years a service has grown within the construction industry and within some larger architectural firms called construction management. This service makes available within the architectural design phase of a project information on construction techniques that can anticipate and eliminate problems in later phases of the process. It has frequently happened that plans have had to be redesigned because later construction information indicated that the original approach was considerably more costly than necessary, or posed serious construction problems that could be avoided. In addition, through construction management the design of projects can be directly geared to make use of critical path planning techniques during construction. This is warranted especially in larger projects where considerable savings in time and costs become possible.

Also to be considered is the use of the construction management service within the physical master planning phase of development, especially where new campuses are involved or where considerable additions to an existing campus are proposed. It is in the formative stages of development that considerable economies are possible through a heightened awareness of the later construction process.

It is argued by some that such heightened awareness of the demands of construction may limit opportunities for good design. However, this need not be so, and such awareness may in fact add greater flexibility to the design process and economies gained can be used for design improvements.

Considering the foregoing, it is the recommendation of the Facilities Resource Group that the service of Construction Management be explored for use within the facilities process on a regular basis.

Lease/Purchase Procedure

The lease/purchase concept in facilities development is one in which the space needs and performance characteristics of a project are described in a document which is then used to solicit bids from construction firms to design and build facilities at a given cost within a given length of time. Selections are made on the basis of proposed costs, delivery time, and a preliminary design of the project.

In at least two cases within higher education the lease/purchase concept was used to develop facilities--one for student housing at Eastern Connecticut State College and a second for a new campus for Middlesex Community College. Notably, the process eliminates time consuming reviews of plans by Public Works. Indications are that savings in time and money are possible without compromise of performance characteristics.

Since the lease/purchase concept affords savings in time and cost of delivering facilities, it is the recommendation of the Facilities Resource Group that this method be used where applicable.

Economies in Construction

In discussions of economy and efficiency with respect to facilities a word of caution appears in order. In the press to get more facilities with available funds, there is a tendency to purchase these benefits through building temporary facilities or through special purpose facilities that

cannot be readapted to new uses. It therefore appears appropriate to comment at this time that such expediences if generally practiced, can in the long run lead to considerable waste. Thus temporary facilities that incur higher costs of maintenance at a later date, facilities that cannot be remodeled for new uses, or which frustrate year round use due to a lack of proper climate control, are not economical if a long run perspective is introduced. It is therefore a recommendation of the Facilities Resource Group that in the design of all facilities due regard be taken of the long run factors that truly determine economies.

Chapter IX

Environmental And Esthetic Considerations

Today's center of advanced instruction, as an architectural symbol, has not yet attained its full and deserved stature. Our chronic preoccupation with the more immediate demands of everyday life has caused our centers of learning to be hidden behind a dense screen of skyscrapers, corporate headquarters, high-tension lines, TV antennas, and the stacks of power plants. Furthermore, our constant demand "to get the most for the dollar" has stripped the center of learning of its role as an area where the art that stamps our age can be cultivated, disseminated, and eventually judged.

Moreover, our acknowledgement of the importance of higher education is evidenced far more by the extent of our facilities than by their quality. The buildings and related elements, viewed individually as well as in a statewide perspective, represent a potpourri of styles, a union between form and function that is fragile at best, and an occasional ingenuous outburst of self-expression, but on the whole are lacking in organic unity and esthetic significance.

And yet, in the pageant of history, it is the college and the university that most clearly reflect the educational goals and spiritual ideals of the times. We are made to realize this when we consider that, a generation or even a decade hence, we will be judged precisely as we have judged the past, in the words of Ruskin, "by our words, our deeds, and our art".

Thus it is essential, in planning for the immediate as well as the distant future, that we make special note of the physical character of the educational surroundings we propose to create.

First of all, the sites for new facilities as well as new institutions should be selected with particular attention to their environmental appropriateness. We are now universally conscious of the need to preserve our magnificent heritage in topography, in natural growth, in watercourses and wetlands. However, we have not yet begun to document this awareness in the citing and design of the very centers in which this knowledge is formulated and synthesized. Every new structure should be located in relation to its natural context as a graphic token of our respect for the world we invaded -- and which we choose to continue to inhabit. The facilities in their full range, from parking lots and stadia to libraries and dormitories, should contribute to a harmonious whole. In their surfaces, their forms, and their interrelation, the buildings should form part of a single organic unit.

Secondly, the spaces between structures should be studied and treated with as much care and attention to detail as the structures themselves. The whole should result in an atmosphere which is in itself an esthetic experience.

No single factor in the educational process is more important than an atmosphere which is conducive to observation, study, and individual intellectual development. No single center of activity, including the church and museum, can do more to bring to the student, and to the world he will eventually influence, the elevation of the human spirit that results from contact with painting, sculpture, architecture, music, and the art of landscape.

This, well above and beyond the relatively simple task of providing mere shelter, is the role of facilities of higher education for the future.

The task is not an easy one, regardless of the visible, tangible nature of its elements. The static quality of facilities in every category

must maintain pace with evolutionary changes in instructional methods and revolutionary changes in student life -style.

However, its solution does not necessarily depend upon the massive expenditure of additional funds. In all probability, a reduction in the rate of demand may be felt, due to the influence of two major factors.

First of all, the trend toward shared programs, though essentially sporadic in application, is bound to have an appreciable effect on the need for new space. Close cooperation among state, private, and proprietary school, within logical geographic limitations, should be seriously considered in this regard. Furthermore, the development of combined centers, where the requirements of two-year technical certificates and two and four-year programs will share the same roof, will likewise have an effect. Beyond this, there is the strong probability that existing methods of communications will be utilized to make education available and even offer degrees in specialized areas without resort to the necessity of structures of any kind, excepting, of course, those that house the electronic equipment.

Secondly, the standards of living accommodations for university and college students, which have altered radically in the last decade, will bring about noticeable changes. These have progressed beyond the state of coed apartments; the current and eminently desirable norm is "living off-campus". This trend will result in a marked decrease in the demand for the cell-like dormitory of the past. It will be characterized, conversely, by an increase in the demand for parking space in close proximity to the academic facilities and, in some cases, by the construction of parking garages. There is little doubt that this novel feature in the academic landscape will be rendered palatable in terms of construction financing and student tuition long before its negative environmental impact ceases to be felt.

In conclusion, it is safe to say that a study of physical facilities

for higher education, in all their varied dimensions, is mandatory. As noted in detail in Chapter II, this study should be made by a carefully selected and continuing group of capable and dedicated professionals. It should be continually adjusted (to the extent that concrete, steel, and asphalt can be "adjusted"), on the basis of new goals, programs, values, and fluctuations in student population. New measures for evaluating facilities, furthermore, should be established. The near-archaic "square-foot-per-student" may be replaced, for example, by a phrase from the Weather Bureau, and in the future the intellectual climate of an institution may be calibrated in "degree-dollars", with hopefully some diminution in the pervasive "chill-factor", with which the taxpayer views his share in the operation.

In any case, progress in this complex field cannot be made through immobility or moratoria; the application of the solution must immediately follow the study. Fortunately, in the broad range of the overall challenge, the facets of shelter and exterior image, as stated in the preface, are of somewhat less than first priority.

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